DOCUMENT-IDENTIFIER: US 5549791 A
TITLE: Individualized cellulosic fibers crosslinked with polyacrylic acid polymers

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BSPR:
Other applicable methods for defibrating the cellulosic fibers include, but are not limited to, treatment with a Waring blender and tangentially contacting the fibers with a rotating **disk refiner, hammer mill** or wire brush. Preferably, an air stream is directed toward the fibers during such defibration to aid in separating the fibers into substantially individual form. Regardless of the particular mechanical device used to form the fluff, the fibers are preferably mechanically treated while initially containing at least about 20% moisture, more preferably containing between about 20% and about 60% moisture. Mechanical refining of fibers at high consistency or of partially dried fibers may also be utilized to provide curl or twist to the fibers in addition to curl or twist imparted as a result of mechanical defibration. The fibers made according to the present invention have unique combinations of stiffness and resiliency, which allow absorbent structures made from the fibers to maintain high levels of absorptivity, and exhibit high levels of resiliency and an expansionary responsiveness to wetting of a dry, compressed absorbent structure. In addition to having the levels of crosslinking within the stated ranges, the crosslinked fibers are characterized by having water retention values (WRV's) of less than about 60, more preferably between about 25 to about ,50, and most preferably between about 30 and about 45, for conventional, chemically pulped, papermaking fibers. The WRV of a particular fiber is indicative of the level of crosslinking for a particular crosslinking chemistry and method. Very highly crosslinked fibers, such as those produced by many of the prior art known crosslinking processes previously discussed, have been found to have WRV's of less than about 25, and generally less than about 20. The particular crosslinking process utilized will, of course, affect the WRV of the crosslinked fiber. However, any process which will result in crosslinking levels and WRV's within the stated limits is believed to be, and is intended to be, within the scope of this invention. Applicable methods of crosslinking include dry crosslinking processes and nonaqueous solution crosslinking processes as generally discussed in the Background Of The Invention. Certain preferred dry crosslinking and nonaqueous solution crosslinking processes for preparing the individualized, crosslinked fibers of the present invention, will be discussed in more detail below. Aqueous solution crosslinking processes

wherein the solution causes the fibers to become highly swollen will result in fibers having WRV's which are in excess of about 60. These fibers will provide in/)sufficient stiffness and resiliency for the purposes of the present invention.

DOCUMENT-IDENTIFIER: US 5476711 A
TITLE: Fiber blending system

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BSPR:
According to yet another aspect of the present invention, a fiber blending apparatus is provided for blending cellulosic and synthetic fibers to form a mat. The fiber blending apparatus includes a volumetric type feeder of a type which receives incoming bulk synthetic fibers, typically in fluff form, and meters the received fibers. The feeder provides a metered amount of synthetic fibers which leave the feeder at a desired rate. The fiber blending apparatus also includes a fiberizer such as a **hammermill, disk refiner,** fluffer or other mechanical fiberizer apparatus with a fiberizing blending chamber. The blending chamber receives the metered amount of synthetic fibers from the feeder at the desired rate along with cellulosic fibers. The fiberizer blends the received fibers within the blending chamber. The fiberizer may also have an air-laying chamber which communicates with the blending chamber through an apertured fiber disperser, such as a screen, having a plurality of apertures therethrough of a predetermined or preselected aperture size. Within the air-laying chamber the fiberizer may have a fiber collector, such as a foraminous endless belt. A vacuum may be drawn across the fiber disperser to aid in extracting the blended fibers from the blending chamber through the disperser. In the case where a foraminous belt is used, the vacuum may be drawn across the belt and disperser to assist in depositing and holding the extracted fibers on the foraminous belt to form the mat. The disperser may have apertures sized and shaped to impart a desired contour to fibers passing therethrough for use in controlling the characteristics of a mat made from such fibers.

DEPR:
The metered quantity of synthetic fibers 20 is lifted from the upper end 36 of belt 32 by an aerating roller 44. The aerating roller 44 picks and lifts the metered synthetic fibers off of belt 32 and aerates the fibers. The aerated metered fibers travel through conduit 46 to a primary blower 48. The primary blower 48 delivers the metered synthetic fiber through conduit 49 to a fiberizer 50, such as, a **hammermill, disk refiner,** fluffer or other mechanical fiberizer apparatus.

DOCUMENT-IDENTIFIER: US 4468264 A
TITLE: High pressure decorative laminates containing an air-laid web of fibers and filler and method of producing same

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BSPR:
Air-laid fibrous webs are prepared by disintegrating fibrous, cellulosic material into its component fibers, transporting the fibers to a foraminous moving web-forming surface and depositing the fibers thereon to form a layer with the aid of suction applied to the under side of the web-forming surface. The fibrous, cellulosic material is disintegrated into its component fibers by a machine such as a **hammermill or disc refiner** and the individual fibers are transported to the forming surface in an air-stream. Binder material is applied to or admixed with the fibers as a particulate solid or as a liquid spray and the web deposited therefrom is then consolidated between nip rollers. When the binder is added as a solid to the air-fiber stream, it may be introduced into the hammermill or thereafter, but before deposition on the forming surface. Additionally, when the binder is used as a spray, the sprayed fibers may thereafter be dried and introduced as such into the forming apparatus.